



MODIS Geolocation Status

MODIS Science Team Meeting

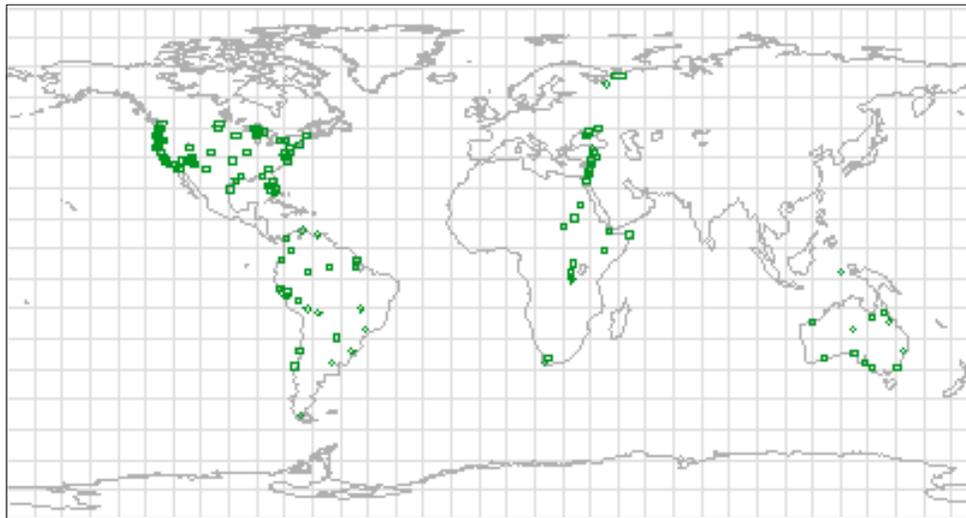
June 7, 2000

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MODIS Geolocation Goals

- Geolocation accuracy specification is 300 m (2 σ) and goal is 100 m (2 σ) at nadir
- Geolocation goal driven by Land 250 m change product requirements



Global distribution of
Ground Control Points

← Land: 550 CPs from
110 TM Scenes

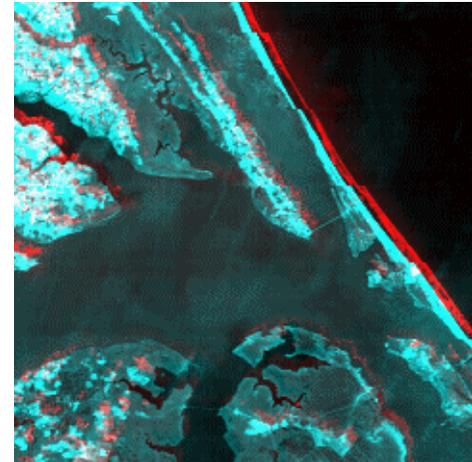
Ocean: 4600 island
points from SeaWifs
library



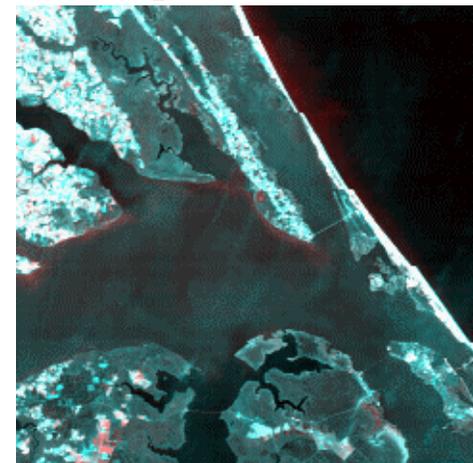
Current Status

- Geolocation program is performing well in GSFC DAAC
- Control point matching program in MODAPS operations on April 30
- At-launch Geolocation error was 1.7 km RMS
 - Bias found is Roll: -240 arcsec (-0.8 km at nadir), Pitch: 350 Arcsec (1.2 km at nadir)
 - Removal of roll/pitch bias in DAAC operations on Mar. 20 (data day-of-year 110) reduced error to 0.5 km RMS
- Correction of yaw (134 Arcsec) and wedge angle (39 Arcsec, 270 m at nadir) expected in DAAC operations by June 9
 - Will reduce error to 0.2 km RMS (~ 400 m 2 σ)

At-launch



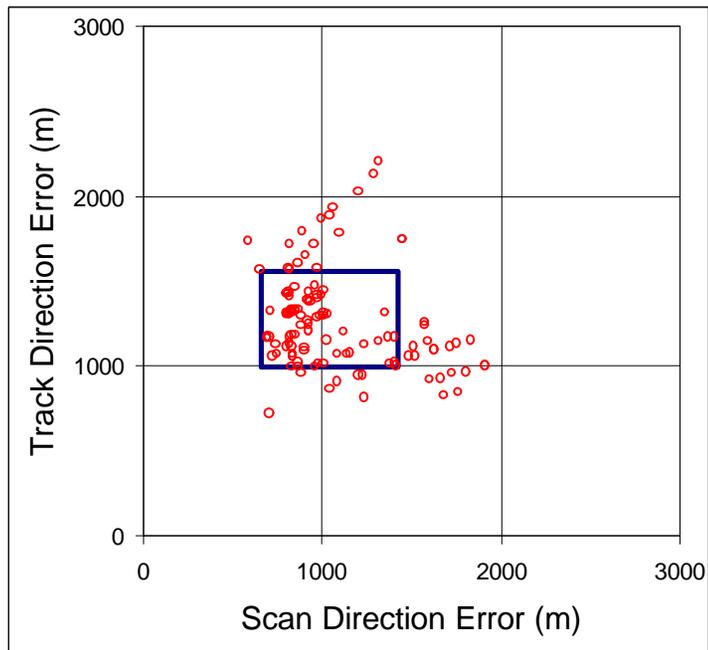
Expected on 6/9



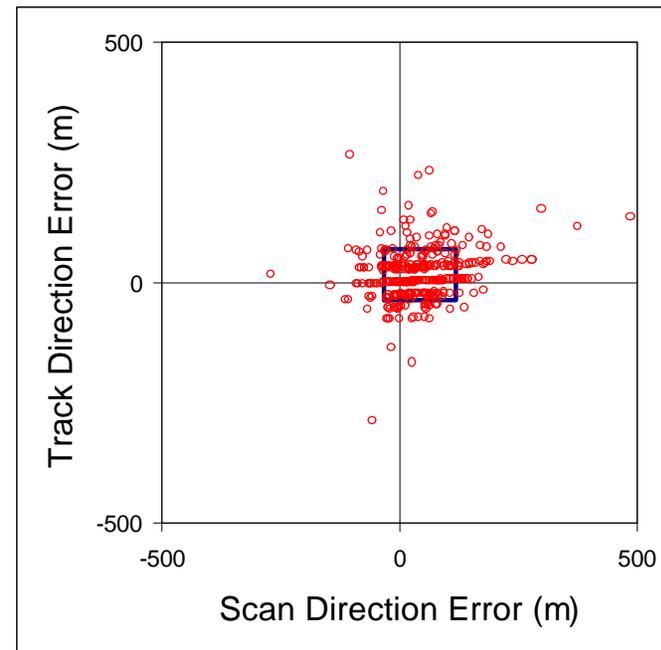


At-launch vs. Expected Error

At-launch Error (126 points, 0.5 step size)



Expected Error (375 points, 0.1 step size)

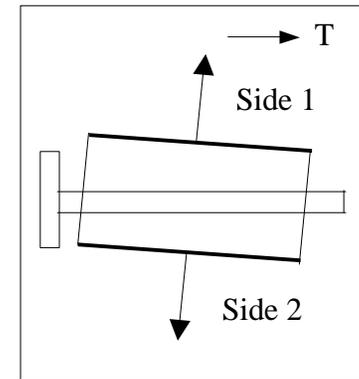
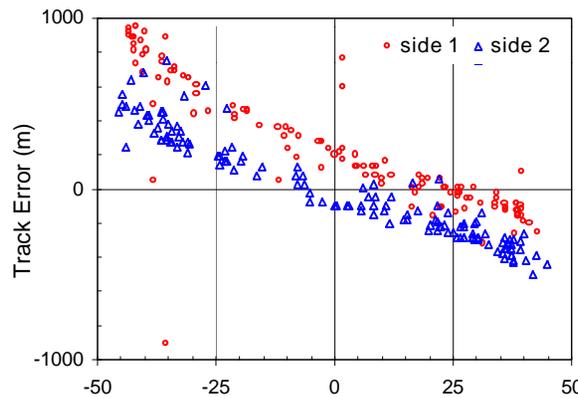
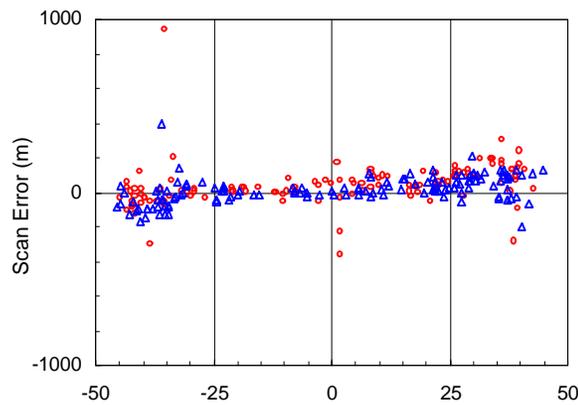


- Expected results based on 375 land control point matches with > 0.6 correlation coefficient

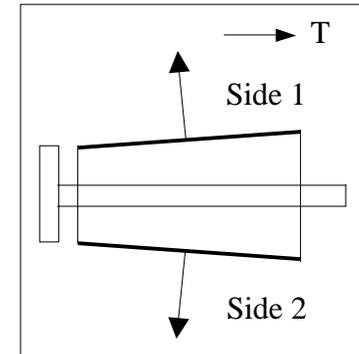
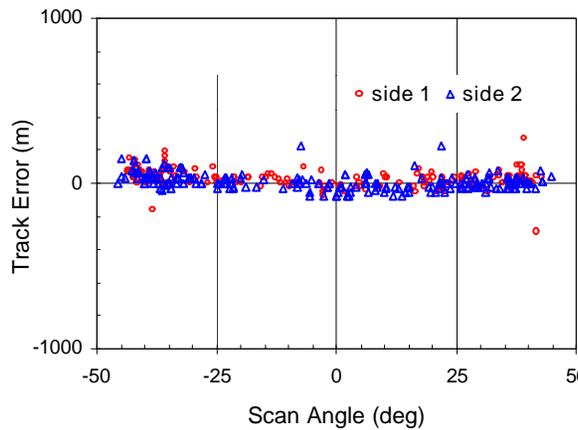
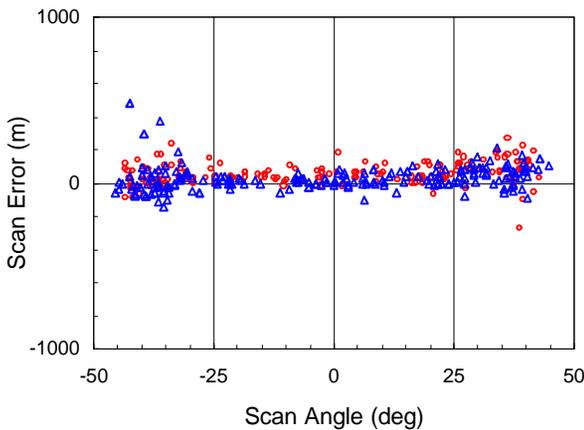


Yaw & Wedge Angle Correction

Before Yaw and Wedge Angle Correction

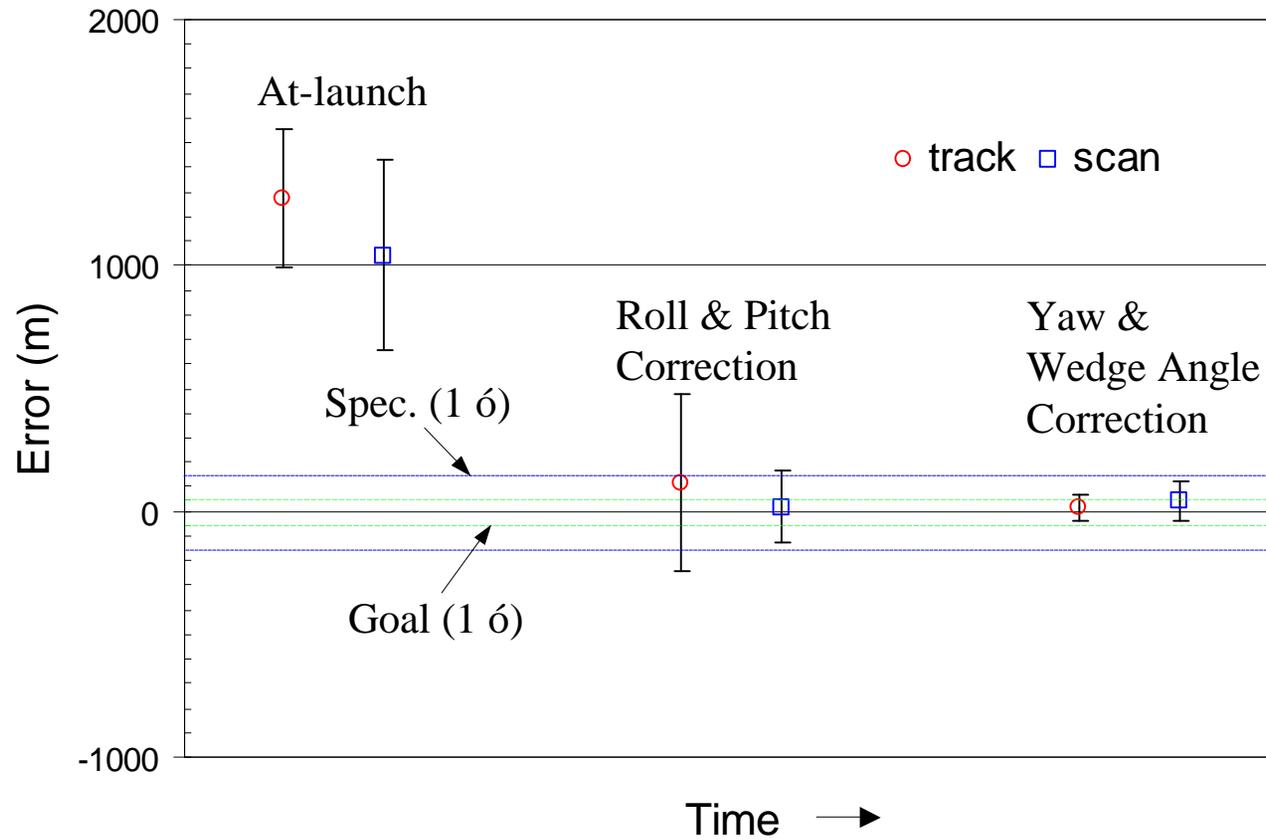


After Correction





Error Trend





Next Steps

- Further analysis will be performed to characterize along scan mirror motion and remaining biases
- Longer term analysis will look at trends and cyclical variations
 - Will look for dependence on temperature, time on orbit, etc.
- Examine periods near orbit and attitude maneuvers and other events to determine when instrument is outside of accuracy specifications/goals
 - Develop a process to identify the events
 - Operational island matching needed to provide continuous global measurements – analysis of thresholds and use of cloud mask underway
- Evaluate terrain model, correction algorithm
- Examine cross-instrument issues – compare results with MISR and ASTER teams

Expect to reach goal by end of the year



AQUA Plans

- Planned Delivery in Oct. 2000
 - Data driven switch between Terra/Aqua
 - More complete version information
 - Other minor improvements
- Using same error analysis approach
 - Some refresh of chip library needed
 - Further work on error analysis